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AUTOMATIC VENDING MACHINE
[Jido Hanbaiki]

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Abstract

Purpose: To provide an automatic vending machine that reduces the generation of products with an expired taste appreciation period, can promote sales during the taste appreciation period, and can reduce discharge labors of products which cannot be on sale due to the expiration of the taste appreciation period, regarding the improvement of an automatic vending machine for selling foods with a taste appreciation period.

Constitution: Taste appreciation setup means 20 and S1 set a taste appreciation period of products housed in product columns. A housing date storage means 23 stores the date of housing of the above-mentioned products into each product column. Discrimination means 20 and S5 discriminate whether or not products, in which a preset prescribed number of day expires from the date of housing within the taste appreciation period, exist for each product column, and sales price change means 20 and S3 change the sales price for the product columns, in which the products wherein a prescribed number of day expires exist as a result of the discrimination, to a prescribed price. As a result, as the taste appreciation expiration approaches, the sales prices is gradually lowered, so that the purchase desire of consumers is stimulated, thereby improving the sales efficiency.

¹ Numbers in the margin indicate pagination in the foreign text.

1. Title of the Invention: AUTOMATIC VENDING MACHINE

2. Claims

1. An automatic vending machine characterized by the fact that it is equipped with a taste appreciation setup means that sets a taste appreciation period of products housed in product columns, a housing date storage means that stores the date of housing of the above-mentioned products into each product column, a discrimination means that discriminates whether or not products, in which a preset prescribed number of day expires from the date of housing within the taste appreciation period, exist for each product column, and a sales price change means that changes the sales price for the above-mentioned product column, in which the above-mentioned products in which the above-mentioned prescribed number of day expires, exist as a result of the above-mentioned discrimination, to a prescribed price.

2. An automatic vending machine characterized by the fact that it is equipped with a taste appreciation setup means that sets a taste appreciation period of products housed in product columns, a housing date storage means that stores the date of housing of the above-mentioned products into each product column, a discrimination means that discriminates whether or not products, in which a preset prescribed number of day expires from the date of housing within the taste appreciation period, exist for each product column, and a sales price change means that changes the sales price for the above-mentioned product column, in which the above-mentioned products

wherein the above-mentioned prescribed number of day expires exist as a result of the above-mentioned discrimination, to a prescribed price and re-changes it to the price before the above-mentioned change after the completion of sales of the above-mentioned products in which the above-mentioned prescribed number of day expires.

3. An automatic vending machine characterized by the fact that it is equipped with a taste appreciation setup means that sets a taste appreciation period of products housed in product columns, a housing state storage means that stores the date of housing of the above-mentioned products into each product column and the number of housing on each said date of housing, a discrimination means that discriminates the existence of products, in which the above-mentioned taste appreciation period expires from the above-mentioned date of housing stored, and the number of said product for each said product column, a discharge instruction means that instructs a discharge for discharging of the above-mentioned products from the above-mentioned product columns, and a product discharge means that sequentially discharges the products in which the above-mentioned taste appreciation period expires from the corresponding product columns based on the result of the above-mentioned discrimination, if the above-mentioned discharge instruction is given.

3. Detailed explanation of the invention

[0001]

(Industrial application field)

The present invention pertains to an automatic vending machine.

In particular, it pertains to an improvement of an automatic vending machine for selling foods with a taste appreciation period.

[0002]

(Prior art)

A conventional automatic vending machine, which sets a taste appreciation period of products being on sale, discriminates whether or not the taste appreciation period set expires, and stops the sales of the housed products, is known.

[0003] In such an automatic vending machine, in case the products are housed in product columns (shelves), the taste appreciation period of the products is set for each product column, so that if the taste appreciation period expires, the sales of the products of the corresponding product column is automatically stopped. After stopping the sales, the products, in which the taste appreciation period expires, are continuously discharged from the product columns by designating said product column through remote controller, etc., so that new products are supplemented. The products, in which the taste appreciation period expires, cannot but be disused, and it is desirable to sell the products within the taste appreciation period, if possible.

[0004]

(Problems to be solved by the invention)

However, in the above-mentioned conventional automatic vending machine, since the sales of the products has been stopped when the taste appreciation period expires, the sales could not be promoted during the taste appreciation period.

[0005] Also, in the above-mentioned conventional automatic vending machine, the sales was only stopped for each product column, and when the products, in which the taste appreciation period expired, was discharged, it was necessary to discharge the products by individually designating said product columns stopped, so that labors were complicated.

[0006] Furthermore, in case the products are simply supplemented without resetting a taste appreciation period, etc., the sale is stopped based on the taste appreciation period of the previously housed products. For this reason, after stopping the sales, the products were discharged one by one, and the taste appreciation period was confirmed one by one, so that the discharge was stopped at the stage where the initial products supplemented were discharged. Then, a salable state had to be reset. Thereby, labors were required.

[0007] A first purpose of the present invention is to provide an automatic vending machine that reduces the generation of products with an expired taste appreciation period and can promote sales during the taste appreciation period.

[0008] A second purpose of the present invention is to provide an automatic vending machine that can reduce labors when products, which cannot be on sale due to the expiration of the taste appreciation period, are discharged.

[0009]

(Means to solve the problems)

In order to solve the above-mentioned first purpose, the

invention of Claim 1 is equipped with a taste appreciation setup
means that sets a taste appreciation period of products housed in
product columns, a housing date storage means that stores the date of
housing of the above-mentioned products into each product column, a
discrimination means that discriminates whether or not products, in
which a preset prescribed number of day expires from the date of
housing within the taste appreciation period, exist for each product
column, and a sales price change means that changes the sales price
for the above-mentioned product column, in which the above-mentioned
products in which the above-mentioned prescribed number of day
expires, exist as a result of the above-mentioned discrimination, to
a prescribed price.

[0010] The invention of Claim 2 is equipped with a taste appreciation
setup means that sets a taste appreciation period of products housed
in product columns, a housing date storage means that stores the date
of housing of the above-mentioned products into each product column,
a discrimination means that discriminates whether or not products, in
which a preset prescribed number of day expires from the date of
housing within the taste appreciation period, exist for each product
column, and a sales price change means that changes the sales price
for the above-mentioned product column, in which the above-mentioned
products wherein the above-mentioned prescribed number of day /3
expires exist as a result of the above-mentioned discrimination, to a
prescribed price and re-changes it to the price before the above-
mentioned change after the completion of sales of the above-mentioned
products in which the above-mentioned prescribed number of day

expires.

[0011] In order to achieve the above-mentioned second purpose, the invention of Claim 3 is equipped with a taste appreciation setup means that sets a taste appreciation period of products housed in product columns, a housing state storage means that stores the date of housing of the above-mentioned products into each product column and the number of housing on each said date of housing, a discrimination means that discriminates the existence of products, in which the above-mentioned taste appreciation period expires from the above-mentioned date of housing stored, and the number of said product for each said product column, a discharge instruction means that instructs a discharge for discharging of the above-mentioned products from the above-mentioned product columns, and a product discharge means that sequentially discharges the products in which the above-mentioned taste appreciation period expires from the corresponding product columns based on the result of the above-mentioned discrimination, if the above-mentioned discharge instruction is given.

[0012]

(Operation)

According to the invention of Claim 1, the taste appreciation setup means sets a taste appreciation period of products housed in product columns. The housing date storage means stores the date of housing of the above-mentioned products into each product column. The discrimination means discriminates whether or not products, in which a preset prescribed number of day expires from the date of

housing within the taste appreciation period, exist for each product column. The sales price change means changes the sales price for the above-mentioned product column, in which the above-mentioned products in which the above-mentioned prescribed number of day expires, exist as a result of the above-mentioned discrimination, to a prescribed price. As a result, the sales price is gradually lowered as the taste appreciation expiration approaches, so that the purchase desire of consumers is stimulated, thereby being able to improve the sales efficiency.

[0013] According to the invention of Claim 2, the taste appreciation setup means sets a taste appreciation period of products housed in product columns. The housing date storage means stores the date of housing of the above-mentioned products into each product column. The discrimination means discriminates whether or not products, in which a preset prescribed number of day expires from the date of housing within the taste appreciation period, exist for each product column. As a result, the sales price change means changes the sales price for the above-mentioned product column, in which the above-mentioned products wherein the above-mentioned prescribed number of day expires exist as a result of the above-mentioned discrimination, to a prescribed price and re-changes it to the price before the above-mentioned change after the completion of sales of the above-mentioned products in which the above-mentioned prescribed number of day expires. Therefore, the sales price is gradually lowered as the taste appreciation expiration approaches, so that the purchase desire

of consumers is stimulated, thereby being able to improve the sales efficiency. At the same time, in case the sales of the products in which said taste appreciation expiration approaches is completed, usually, since it can be easily transferred to the sales, the sales efficiency is improved.

[0014] According to the invention of Claim 3, the taste appreciation setup means sets a taste appreciation period of products housed in product columns. The housing state storage means stores the date of housing of the above-mentioned products into each product column and the number of housing on each said date of housing. Along with it, if the discharge instruction for discharging the products from the product columns is given, the discrimination means that discriminates the existence of products, in which the above-mentioned taste appreciation period expires from the above-mentioned date of housing stored, and the number of said product for each said product column. As a result, the product discharge means sequentially discharges the products in which the above-mentioned taste appreciation period expires from the corresponding product columns based on the result of the above-mentioned discrimination. Therefore, when new products are supplemented, only the products, in which the taste appreciation period expires, can be discharged simply by instructing the discharge of the products through the discharge instruction means.

[0015]

(Application examples)

Next, appropriate application examples of the present invention are explained referring to the figures.

(I) First application example

Figure 1 is an external view showing an automatic vending machine.

[0016] Said automatic vending machine 1, as shown in Figure 1(a), is largely constituted by a door 2 and an automatic vending machine body 3 with several product columns that are not shown in the figure.

9 [0017] At the front upper part of the door 2, a product display 4 for displaying the products is installed, and a price display production selection button 5 with a sales price display part, which is not) shown in the figure, for selecting the corresponding products for each product column is installed.

[0018] At the front lower part of the door 2, a product drawing-out port 6 for drawing the products discharged from the product column is installed.

18 [0019] Inside the door 2, as shown in Figure 1(b), a display panel 7 for controlling the taste appreciation period of the products housed is installed, and a remote controller 8 for a product control such as
19 setup of the taste appreciation period, display of the number of product sold, and discharge display of the products with an expired taste appreciation period is installed so that it can be attache and detached.

[0020] Several product columns are furnished in the automatic vending machine 3, and a product discharge port 12 for discharging the products is installed.

[0021] Next, Figure 2 shows an outlined constitutional block diagram

showing a control system of the automatic vending machine.

[0022] The control system of the automatic vending machine 1 consists of CPU 20 for controlling the entire automatic vending machine 1, ROM 21 for pre-storing operation program of the CPU 20, possible number data of product housing for each product column, etc., RAM 22 for temporarily storing various kinds of data, nonvolatile RAM 23 (NVRAM) for storing actual number data of product housing, housing date data corresponding to the day of products housed (housing day), sales price discount rate data (or discount amount data) corresponding to the number of lapsed day from the housing day, number data of sales for counting the number of sales of products, etc., sales control part 24 for controlling the sales and discharge of the products, and said display panel 7 and remote controller 8.

[0023] Next, referring to Figure 3, the operation is explained.

[0024] [Processing at a time of an initial setup operation] First, the number data of taste appreciation period day is set via the remote controller 8 (step S1). Next, the number data of taste appreciation period set is allocated to each product column (column being decided) (step S2). Next, the number of lapsed day from the housing day and a discount amount are set (step S3). For example, if the taste appreciation period is 30 days, 80[%] (discount rate of 20[%]) is set before 5 days from the taste appreciation expiration (= the number of lapsed day, 25 days), and 75[%] (discount rate of 25[%]) is set before 4 days from the taste appreciation expiration (= the number of lapsed day, 26 days).

[0025] [Processing at a time of a normal operation]

At a time of a normal operation, the number of lapsed day from the housing day of products is calculated for each product column (step S4), and whether or not the number of lapsed day of the products housed in the product columns being calculated reaches a prescribed number of day is discriminated (step S5).

12 [0026] In the discrimination of step S5, if the number of lapsed day does not reach a prescribed number of day in the products housed in said product column, the processing proceeds to step S7. On the other hand, in the discrimination of step S5, if the products, in which the number of lapsed day reaches a prescribed number of day, are housed, the discount price of said product column is calculated, and the discount price is displayed on a sales price display part, which is not shown in the figure, in the price display product selection button 5. For example, in the above-mentioned example, if the date is 5 days before the taste appreciation expiration (the number of lapsed day, 25 days), when the regular sales price is 100 yen, it is displayed as 80 yen ($= 100 \text{ yen} \times 80\%$).

[0027] Next, the CPU 20 discriminates whether or not processing of steps S4-S6 is implemented for all the product columns (step S7) and repeats processing of step S-S6 until the processing is implemented for all the product columns.

[0028] In the discrimination of step S7, if all the product columns are processed, a standby state is formed (step S8), and the processing proceeds to a normal sales state.

[0029] According to the above first application example, since the sales prices can be reset (sold by the discount price) in accordance

with the number of lapsed day from the housing day, the purchase desire of consumers is stimulated, so that the sales can be promoted. Thereby, the number of remaining product at a time of expiration of the taste appreciation period, that is, the number of product to be disused can be reduced. Therefore, the sales efficiency can be improved, and resources can be effectively utilized.

[0030] In the above explanation, the case where the products with the same taste appreciation period are housed in one product column has been explained. In case the products with different taste appreciation periods are housed in one product column, the products with the same taste appreciation period are on sale at a discount price by a processing similar to the above-mentioned processing, and in case the sale of said products is ended, the processing corresponding to the number of lapsed day of the products housed next is implemented.

[0031] In other words, if the products housed next to the products sold at the discount price are within a normal price sales period, they are sold at the normal sales price by displaying the normal sales price. Similarly, if the products are within the sales period at the discount price, they are sold at the discount price by displaying the discount price corresponding to the number of lapsed day. In this case, each time the products are supplemented, it is necessary to store the number of products supplemented into the NVRAM.

[0032] With the above constitution, even if the products with different taste appreciation periods are housed in one product

column, they are within the taste appreciation period, and in case a prescribed number of day is passed, the discount sale is possible, so that the sales efficiency can be improved, and resources can be effectively utilized.

(II) Second application example

In its second application example, an example of the automatic vending machine, which can simplify the supplement work of products by improving the discharge efficiency of the products, which could not be sold during the taste appreciation period, is presented.

[0033] Since the external constitution or physical constitution of the automatic vending machine is similar to that of the first application example, the same symbol is given to the same or equivalent part, and its detailed explanation is omitted.

[0034] Next, the functions and the operation are explained referring to Figures 4 and 5.

[0035] First, the number data of taste appreciation period is set via the remote controller 8 (step S11).

[0036] Next, the number data of taste appreciation period set is allocated to each product column (column being decided) (step S12).

[0037] Then, whether or not the products are supplemented to the product column (the products are charged) is discriminated (step S13), and if the products are not supplemented, the processing proceeds to step S16.

[0038] In the discrimination of step S13, if the products are supplemented, the number of product supplemented (number charged) to each product column is stored in the NVRAM (step S14), and the charge

date and time are stored in the NVRAM (step S15).

[0039] Then, whether or not the charge operation is completed is discriminated (step S16), and if the charge operation is not completed, the processing proceeds to step S13, and the processing of steps S13-S16 is repeated until the charge operation is completed.

[0040] In the discrimination of step S16, if the charge operation is completed, the CPU discriminates whether or not the discharge operation is instructed by the remote controller 8 (step S17).

[0041] In the discrimination of step S17, while a normal sales operation is carried out until the discharge operation is instructed, a standby state is formed (step S17; No). If the discharge operation is instructed (step S17; Yes), the number of lapsed day from the housing day of the products is calculated for each product column (step S18).

[0042] At step S18, in case at least part of the products housed in the product column being calculated reaches the expiration of the taste appreciation period, the number of product with an expiration of said taste appreciation period, that is, the number /5 of product to be discharged is calculated for said product column (step S19), and the discharge is started (step S20).

[0043] Next, whether or not the discharge is completed is discriminated (step S21), and if the discharge is not completed, the processing proceeds to step S18, and the processing of step S18-S2 is repeated until the discharge of all the product columns is completed.

[0044] In the discrimination of step S21, if the discharge of the products with an expired taste appreciation period in all the product

columns is not completed (step S21; Yes), the processing proceeds to a normal sales state, and a standby state is formed (step S22).

[0045] According to the above second application example, the products with an expired taste appreciation period can be automatically discharged simply by instructing the discharge, and a salesman, who supplements products to the automatic vending machine, may simply supplement new products, regardless of the discharge operation, the labors and the processing time of the salesman can be simplified.

[0046]

(Effects of the invention)

According to the invention of Claim 1, the discrimination means discriminates whether or not products, in which a preset prescribed number of day expires from the date of housing within the taste appreciation period, exist for each product column. The sales price change means changes the sales price for the above-mentioned product column, in which the above-mentioned products in which the above-mentioned prescribed number of day expires, exist as a result of the above-mentioned discrimination, to a prescribed price. As a result, the sales price is gradually lowered as the taste appreciation expiration approaches, so that the purchase desire of consumers is stimulated, thereby being able to improve the sales efficiency. At the same time, the number of product being disused due to the expiration of the taste appreciation period can be reduced, and resources can be effectively utilized.

[0047] According to the invention of Claim 2, the discrimination

means discriminates whether or not products, in which a preset prescribed number of day expires from the date of housing within the taste appreciation period, exist for each product column, and the sales price change means changes the sales price for the above-mentioned product column, in which the above-mentioned products wherein the above-mentioned prescribed number of day expires exist as a result of the above-mentioned discrimination, to a prescribed price and re-changes it to the price before the above-mentioned change after the completion of sales of the above-mentioned products in which the above-mentioned prescribed number of day expires. Thus, the sales price is gradually lowered as the taste appreciation expiration approaches, so that the purchase desire of consumers is stimulated, thereby being able to improve the sales efficiency. At the same time, in case the sales of the products in which said taste appreciation expiration approaches is completed, usually, since it can be easily transferred to the sales, the sales efficiency can be improved. At the same time, the number of product being disused due to the expiration of the taste appreciation period can be reduced, and resources can be effectively utilized.

[0048] Furthermore, the labors in these setup can be reduced.

[0049] According to the invention of Claim 3, if a discharge instruction for discharging the products from the product columns is given, the discrimination means that discriminates the existence of products, in which the above-mentioned taste appreciation period expires from the above-mentioned date of housing stored, and the number of said product for each said product column. As a result,

the product discharge means sequentially discharges the products in which the above-mentioned taste appreciation period expires from the corresponding product columns based on the result of the above-mentioned discrimination. Therefore, when new products are supplemented, only the products, in which the taste appreciation period expires, can be discharged simply by instructing the discharge of the products through the discharge instruction means, so that the labors at a time of the supplement can be reduced.

4. Brief description of the figures

Figure 1 is an outlined external view showing the automatic vending machine.

Figure 2 is an outlined constitutional block diagram showing a control system of the automatic vending machine.

Figure 3 is a processing flow chart showing the first application example.

Figure 4 is a processing flow chart (part 1) showing the second application example.

Figure 5 is a processing flow chart (part 2) showing the second application example.

Explanation of symbols:

- 1 Automatic vending machine
- 2 Door
- 3 Automatic vending machine body
- 4 Product display
- 5 Price display product selection button

- 6 Product drawing port
- 7 Display panel
- 8 Remote controller
- 12 Product discharge port
- 20 CPU
- 21 ROM
- 22 RAM
- 23 NVRAM
- 24 Sales control part

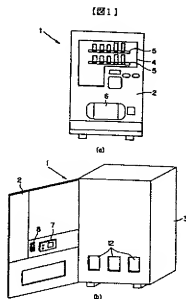


Figure 1

【図2】

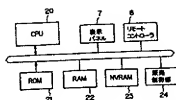


Figure 2:

- 7 Display panel
- 8 Remote controller
- 24 Sales control part

【図5】

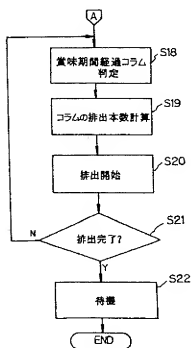


Figure 5:

- S18 Decision of the column with an expired taste appreciation period

- S19 Calculation of the number of column discharged
 S20 Discharge start
 S21 Discharge completion ?
 S22 Standby

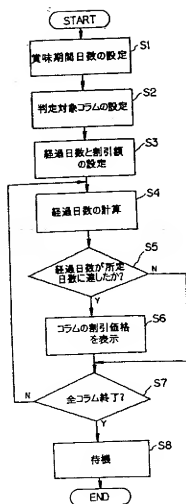


Figure 3:

- S1 Setup of the number of taste appreciation period day
 S2 Setup of the column being decided
 S3 Setup of the number of lapsed day and the discount amount
 S4 Calculation of the number of lapsed day
 S5 Does the number of lapsed day reach a prescribed number of days?
 S6 Display of the discount price of the column
 S7 End of all the columns ?
 S8 Standby

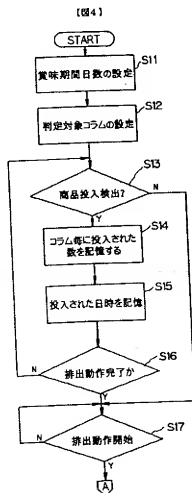


Figure 4:

- S11 Setup of the number of taste appreciation period day
- S12 Setup of the column being decided
- S13 Product charge detected ?
- S14 Storage of the number charged for each column
- S15 Storage of the date and time charged
- S16 Discharge operation completed ?
- S17 Discharge operation start

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(54) 【発明の名称】 自動販売機

(57) 【要約】

【目的】 賞味期間を有する食品を販売する自動販売機の改良に関し、賞味期間を経過した商品の発生を低減すると共に賞味期間中における販売促進を可能とし、また、賞味期間を経過して販売できない商品排出の手間を軽減可能な自動販売機を提供する。

【構成】 賞味期間設定手段20、S1は、商品コラムに収納された商品の賞味期間を設定する。収納日記憶手段23は、各商品コラムへの前記商品の収納日を記憶する。判別手段20、S5は、賞味期間内において収納日から予め設定した所定の日数が経過した商品が存在するか否かを各商品コラム毎に判別し、販売価格変更手段20、S3は、この判別により所定の日数が経過した商品が存在する商品コラムについて販売価格を予め設定された所定の価格に変更する。その結果、賞味期限が近付くにつれて販売価格を漸次低下させて消費者の購買意欲を刺激し、販売効率の向上を図る。

